

Amendments to the Claims

This listing of claims will replace all prior versions and listings of claims in the above-identified application.

Listing of Claims

1. (Currently Amended) In a RAID data storage system, a method comprising:
receiving a first request to read data of a first stripe unit [B_x] of a stripe, wherein the first request is received from a computer system in data communication with the RAID data storage system;
returning data of the first stripe unit [B_x] to the computer system in response to receiving the first request;
receiving a second request to read data of the first stripe unit [B_x], wherein the second request is received from the computer system;
generating ~~new~~ reconstructed data for the first stripe unit [B_x] in response to receiving the second request;
returning the ~~new~~ reconstructed data to the computer system.
2. (Currently Amended) The method of claim 1 wherein the ~~new~~ reconstructed data is generated as a function of error correction data and data of stripe units of the stripe other than the first stripe unit [B_x].
3. (Currently Amended) The method of claim 2 wherein the ~~new~~ reconstructed data for the first stripe unit [B_x] is generated only if the second request is received within a predetermined amount of time after receiving the first request.
4. (Currently Amended) The method of claim 1 further comprising overwriting data of the first stripe unit [B_x] with the ~~new~~ reconstructed data unless a third request to read data of the first stripe unit [B_x] is received from the computer system within a predetermined amount of time after the second request is received.

5. (Currently Amended) The method of claim 1 further comprising comparing data of the first stripe unit [B_x] with the ~~new~~ reconstructed data.

6. (Currently Amended) The method of claim 5 further comprising notifying the computer system of data inconsistency if the comparison shows the data in first stripe unit [B_x] is different from the ~~new~~ reconstructed data

7.-13. (Cancelled)

14. (Currently Amended) The method of claim ~~12~~ 1 wherein the ~~new~~ reconstructed data for the first stripe unit [B_x] is written to the first stripe unit [B_x].

15. (Currently Amended) In a RAID data storage system that receives a request to read data stored in a first stripe unit [B_x], wherein the request is received from a computer system in data communication with the RAID data storage system, a method comprising:

comparing an identification for the first stripe unit [B_x] with identifications for stripe units stored in a table in memory;

if the identification for the first stripe unit [B_x] does not compare equally with one of the identifications stored in the table:

storing the identification for the first stripe unit [B_x] in the table, and;

returning data of the first stripe unit [B_x] to the computer system;

if the identification for the first stripe unit [B_x] does compare equally with one of the identifications stored in the table:

generating ~~new~~ reconstructed data for the first stripe unit [B_x], and;

returning the ~~new~~ reconstructed data to the computer system.

16. (Currently Amended) The method of claim 15:

wherein the first stripe unit [B_x] is one of a plurality of stripe units of a stripe;

wherein the ~~new~~ reconstructed data is generated as a function of (1) error correcting data for the stripe and (2) data of the plurality of stripe units other than the first stripe unit [B_x].

17. (Currently Amended) The method of claim 15 further comprising:
storing a copy of the ~~new~~ reconstructed data in memory;
overwriting data of the first stripe unit [B_x] with the copy of the ~~new~~ reconstructed data
stored in memory if the computer system determines that the ~~new~~ reconstructed
data returned to it is valid.
18. (Currently Amended) The method of claim 15 further comprising:
storing a copy of the ~~new~~ reconstructed data in memory;
overwriting data of the first stripe unit [B_x] with the copy of the ~~new~~ reconstructed data
stored in memory unless a new request is received from the computer system to
read data stored in the first stripe unit [B_x] within a predetermined amount of time
after generating the ~~new~~ reconstructed data.
19. (Currently Amended) In a RAID data storage system, a method comprising:
receiving a first request to read data of a plurality of stripe units, wherein the first request
is received from a computer system in data communication with the RAID data
storage system;
returning the data of the plurality of stripe units to the computer system in response to
receiving the first request;
receiving a second request to read the data of the plurality of stripe units, wherein the
second request is received from the computer system;
generating ~~new~~ reconstructed data for a first stripe unit of the plurality of stripe units in
response to receiving the second request;
returning the ~~new~~ reconstructed data to the computer system along with the data of the
plurality of stripe units other than the first stripe unit.
20. (Currently Amended) The method of claim 19 wherein the ~~new~~ reconstructed data is
generated as a function of error correction data and data of stripe units other than the first stripe
unit [B_x].

21. (Currently Amended) The method of claim 19 wherein the ~~new~~ reconstructed data for the first stripe unit [B_x] is generated only if the second request is received within a predetermined amount of time after receiving the first request.

22. (Original) The method of claim 19 wherein the plurality of stripe units consist of stripe units from first and second separate stripes.

23. (Currently Amended) A computer readable medium storing instructions executable by a first computer system in a RAID data storage system, wherein the RAID data storage system comprises a stripe, wherein the stripe comprises a plurality of stripe units including a first stripe unit [B_x], wherein the first computer system performs a method in response to executing instructions stored on the computer readable medium, the method comprising:

returning data of the first stripe unit [B_x] to a second computer system coupled to the first computer system, wherein the data of the first stripe unit [B_x] is returned in response to receiving a first request to read data of the first stripe unit [B_x], wherein the first request is received from the second computer system;

receiving a second request to read data of the first stripe unit [B_x], wherein the second request is received from the second computer system;

generating ~~new~~ reconstructed data for the first stripe unit [B_x] in response to receiving the second request;

returning the ~~new~~ reconstructed data to the second computer system.

24. (Currently Amended) The computer readable medium of claim 23, wherein the ~~new~~ reconstructed data is generated as a function of error correction data and data of stripe units of the stripe other than the first stripe unit [B_x].

25. (Currently Amended) The computer readable medium of claim 24, wherein the ~~new~~ reconstructed data for the first stripe unit [B_x] is generated only if the second request is received within a predetermined amount of time after receiving the first request.

26. (Currently Amended) The computer readable medium of claim 23, wherein the method further comprises overwriting data of the first stripe unit [B_x] with the ~~new~~ reconstructed data unless a third request to read data of the first stripe unit [B_x] is received from the second computer system within a predetermined amount of time after the second request is received.

27. (Currently Amended) A computer readable medium storing instructions executable by a first computer system in a RAID data storage system, wherein the RAID data storage system comprises a stripe, wherein the stripe comprises a plurality of stripe units including a first stripe unit [B_x], wherein the first computer system performs a method in response to executing instructions stored on the computer readable medium, the method comprising:

comparing an identification for the first stripe unit [B_x] with identifications for stripe units stored in a table in memory in response to the first computer system receiving a request to read data stored in the first stripe unit [B_x], wherein the request is received from a second computer system;

if the identification for the first stripe unit [B_x] does not compare equally with one of the identifications stored in the table:

storing the identification for the first stripe unit [B_x] in the table, and;

returning data of the the first stripe unit [B_x] to the second computer system;

if the identification for the first stripe unit [B_x] does compare equally with one of the identifications stored in the table:

generating ~~new~~ reconstructed data for the first stripe unit [B_x], and;

returning the ~~new~~ reconstructed data to the second computer system.

28. (Currently Amended) The computer readable medium of claim 27:

~~wherein stripe unit B_x is one of a plurality of stripe units of a stripe;~~

wherein the ~~new~~ reconstructed data is generated as a function of (1) error correcting data for the stripe and (2) data of the plurality of stripe units other than the first stripe unit [B_x].

29. (Currently Amended) The computer readable medium of claim 28, wherein the error correcting data comprises parity data for the stripe.

30. (Currently Amended) The computer readable medium of claim 27, wherein the method further comprises:

storing a copy of the ~~new~~ reconstructed data in memory;
overwriting data of the first stripe unit [B_x] with the copy of the ~~new~~ reconstructed data stored in memory if the second computer system determines that the ~~new~~ reconstructed data returned to it is valid.

31. (Currently Amended) The computer readable medium of claim 27, wherein the method further comprises:

storing a copy of the ~~new~~ reconstructed data in memory;
overwriting data of the first stripe unit [B_x] with the copy of the ~~new~~ reconstructed data stored in memory unless a new request is received from the computer system to read data stored in the first stripe unit [B_x] within a predetermined amount of time after generating the ~~new~~ reconstructed data.

32. (Currently Amended) The computer readable medium of claim 27, wherein the method further comprises removing the identification for the first stripe unit [B_x] from the table unless a new request is received from the second computer system to read data stored in the first stripe unit [B_x] within a predetermined amount of time after the identification is stored in the table.

33. (Currently Amended) A computer readable medium storing instructions executable by a first computer system in a RAID data storage system, wherein the first computer system performs a method in response to executing instructions stored on the computer readable medium, the method comprising:

returning data of a plurality of stripe units to a second computer system in response to receiving a first request to the read data of the plurality of stripe units, wherein the first request is received from the second computer system, wherein the second computer system is in data communication with the first computer system;
receiving a second request to read the data of the plurality of stripe units, wherein the second request is received from the second computer system;
generating ~~new~~ reconstructed data for a first stripe unit of the plurality of stripe units in response to receiving the second request;
returning the ~~new~~ reconstructed data to the second computer system along with the data of the plurality of stripe units other than the first stripe unit.

34. (Currently Amended) The computer readable medium of claim 33, wherein the ~~new~~ reconstructed data is generated as a function of error correction data and data of stripe units other than the first stripe unit [B_x].

35. (Currently Amended) The computer readable medium of claim 34, wherein the ~~new~~ reconstructed data for the first stripe unit [B_x] is generated only if the second request is received within a predetermined amount of time after receiving the first request.

36. (Currently Amended) The computer readable medium of claim 33, wherein the method further comprises overwriting data of the first stripe unit [B_x] with the ~~new~~ reconstructed data unless a third request to read data of the first stripe unit [B_x] is received from the second computer system within a predetermined amount of time after the second request is received.

37. (Original) The computer readable medium of claim 33, wherein the plurality of stripe units consist of stripe units from first and second separate stripes.
38. (Currently Amended) In a RAID data storage system, an apparatus comprising:
means for receiving a first request to read data of a first stripe unit [B_x] of a stripe,
wherein the first request is received from a computer system in data communication with the RAID data storage system;
means for returning data of the first stripe unit [B_x] to the computer system in response to receiving the first request;
means for receiving a second request to read data of the first stripe unit [B_x], wherein the second request is received from the computer system;
means for generating ~~new~~ reconstructed data for the first stripe unit [B_x] in response to receiving the second request;
means for returning the ~~new~~ reconstructed data to the computer system.